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NEW AMERICAN MUSCOID DIPTERA.¹

By H. J. REINHARD, College Station, Texas.

The following descriptions of new species are based mainly upon material collected by Messrs. F. A. Cowan and M. R. Wheeler in Mexico and western United States. I am indebted to the latter for the privilege of studying their extensive collections of Muscoid flies and to Dr. George F. Knowlton, who submitted one of the forms treated herein as indicated under the description of same. Types of the new species are in my collection.

***Belvosia auratilis* n. sp.**

A large robust species closely allied to *borealis* Aldrich, but the male genital forceps are distinctly longer, the palpi black and the first two abdominal segments each with only one pair of median marginals.

Male: Front at vertex 0.40 of head width, gradually widening downward into facial angle; frontals in three irregular rows, median one sharply divergent in three or four bristles beneath antennal base; ocellars and orbitals absent; verticals two pairs, stout; parafrontal with gray pollen below becoming thinner and blackish towards vertex; median vitta broad, concolorous with parafrontal; face, parafacial, cheek and posterior orbit silvery white; third antennal segment black, two to two and one-half times length of second; latter usually reddish on front margin and on apex; arista shorter than antenna, brownish black; thickened and tapering to tip; vibrissae over half the length of second antennal segment above the oral margin; parafacial broad, about twice clypeal width; facial ridges with moderately strong bristles extending above the middle; cheek and upper half of parafacial black-haired; palpus stout, occa-

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sionally paler or reddish on extreme tip; back of head flat, cinereous, clothed with pale hairs.

Thorax subshining black, lightly dusted with grayish pollen above, vittae indistinct; sternopleurals usually four; scutellum with five pairs of laterals and numerous irregularly spaced discals on apical half. Legs black, stout, bristly; front pulvillus exceeding length of last tarsal segment. Wing and calypter black; costal spine vestigial; apical cell open well before wing tip; subepaulet blackish, tinged with red on inner apical margin; epaulet wholly black.

Abdomen subshining black, third and fourth segments golden pollinose on basal three-fourths or more, each with a complete marginal row of stout bristles; genitalia black; forceps subequal the length of first segment of hind tarsus, rather straight in profile with tips gently bowed forward, hind surface transversely convex and moderately clothed with long black hairs; accessory process as long as forceps and nearly as thick as latter in profile, basal half bearing numerous long, coarse hairs directed outwardly, tip broadly rounded; fifth sternite black, with a broad V-shaped median excision, inner margin of lobes beset with black hairs and bristles near base.

Female: Front at vertex 0.44 of head width; two to four proclinate and one or two reclinate orbitals; second antennal segment one-half length of third and usually more extensively reddish in ground color than in male.

Length, 17-18 mm.

Holotype male and allotype female, Guadalajara, Mich., Mexico, August 27, 1947 (F. A. Cowan and M. R. Wheeler). Paratypes: 3 males and 7 females, same data as type.

***Belvosia ansata* n. sp.**

Differs from the preceding species chiefly as follows: Male smaller and less robust in build; front at vertex 0.40 of head width; palpus wholly red; vibrissae situated the length of second antennal segment above oral margin; facial ridges with stout bristles ascending about to level with arista; parafacial but slightly narrowed below and nearly equal to clypeal width on lower extremity, black hairs beneath frontals small and averaging less than six in number. Thorax black with thin grayish pollen anteriorly; scutellum deep reddish brown, normally with four pairs of lateral bristles and usually a short spinelike apical or preapical pair. Front claws and pulvilli elongated, almost equal to last two tarsal segments. Wing and calypter deep brownish to black; subepaulet wholly orange red. Abdominal segments three and four with golden pollen extending

to hind margin on venter but less distinctly so on sides, the upper posterior edge of each appearing blackish in direct view; second genital segment reddish on sides; forceps about half as long as first segment on hind tarsus, triangular in rear view; accessory process widest at middle, tapering apically to a narrow rounded tip, sparsely clothed with fine hairs basally on outer side.

Female: Front at vertex 0.40 of head width; one reclinate and usually three proclinate orbitals; second antennal segment slightly over one-half length of third, more or less reddish in ground color; front pulvillus a little shorter than apical tarsal segment.

Length, 14–15 mm.

Holotype male and allotype female, Guadalajara, Mich., Mexico, August 27, 1947 (F. A. Cowan and M. R. Wheeler). Paratypes: 11 males and 4 females, same data as type.

The species resembles *bifasciata* in general appearance but is readily distinguished in having the calypter black, subepaulet wholly orange red and the male genital forceps are distinctly shorter and broader. The golden pollen of the last two abdominal segments extends to the apex of each on the venter but fades out at the sides so that the very narrow hind margins of these segments above appear blackish in most views. This approaches the color pattern of *canadensis*, but in the latter species the hind lobe of the calypter is whitish and the front pulvilli in the male are small.

***Belvosia matamorosa* n. sp.**

A moderate-sized species allied to *elusa* Aldrich, which I have not seen. From the description of the latter (Proc. U.S.N.M., 73: 25) the present species differs in lacking median marginals on the first abdominal segment and the two following ones are more extensively pollinose. Additional differences are listed below.

Male: Front at vertex 0.40 of head width, diverging immediately forward into facial angle; parafrontals gray pollinose on an apparent blackish ground color; frontal vitta obscurely reddish, much narrower than parafrontal; ocellars and orbitals absent; outer verticals about one-half as long as inner pair; frontals in three irregular rows, with about three bristles beneath antennal base diverging widely on upper part of parafacials, the latter also bear a few small black hairs directly below the lowermost bristles; face, parafacial and cheek with dense satiny white pollen on yellow ground color; vibrissae about the length of second antennal segment above oral margin; facial ridge with rather stout bristles on lower three-fifths; first two antennal segments red, third mostly black and about four times length of second; arista brownish, moderately thickened to beyond

middle, thence very slender to tip; palpus stout, red, beset with numerous black hairs, haustellum short, thick, labella large and fleshy; cheek slightly over one-third eye height, clothed with fine black hairs; back of head flattened, cinereous, wholly pale-haired.

Thorax black, the posterior angles, scutellum and humerus reddish brown, thinly gray pollinose above to base of scutellum, latter subshiny but showing thin tawny pollen in a flat rear view; dorsal vittae narrow but rather well defined; sternopleurals four. Legs black; hind tibia ciliate with one larger bristle in the row; pulvilli subequal to length of last tarsal segment. Wing blackish basally and long costal margin to tip of first vein, thence paler to apex including the broad posterior margin; apical cell open well before wing tip; costal spine vestigial; veins including costa blackish; subepaulet wholly orange red, epaulet deep reddish; calypter brown.

Abdomen black, with changeable gray pollen on second segment above, which extends thinly to the hind margin when viewed in an oblique rear angle; third segment with somewhat denser pollen over entire surface above interrupted by a dark median stripe and continuing down sides becoming heavier on venter; fourth segment covered with dense pale yellow pollen to apex; last two segments each with a marginal row of bristles; genital forceps blackish, short and triangular as viewed from the rear, tips separated but not divergent; accessory process reddish, slightly shorter and thicker than forceps in profile, tip rounded; fifth sternite rather small and retracted, lobes black beset with moderately coarse black hairs along the inner basal margin.

Length, 12 mm.

Holotype male, Matamoros, Pueb., Mexico, September 8, 1947 (F. A. Cowan and M. R. Wheeler).

Belvosia villaricana n. sp.

Abdominal segments one to three subshining black and without pollen except on venter, the fourth brownish in ground color, its surface above and below covered with thin changeable pale pollen from base to apex; sternopleuron and cheek pale-haired.

Female: Front at vertex 0.33 of head width; parafrontal yellowish gray pollinose to vertex but somewhat blackish on upper half when viewed from above; frontal vitta red, narrowed toward vertex but at mid front nearly equal to the width of one parafrontal; verticals two pairs, stout; ocellars absent; one reclinate and two or three proclinate orbitals; frontals in a single row; hairs beneath lower frontal bristles pale and delicate; face including sides and cheeks pale yellowish white pollinose on yellow ground color; facial ridges

with four or five bristles and some delicate white hairs outside of latter ascending to or slightly above the middle; vibrissae nearly the length of second antennal segment above oral margin; basal antennal segments brownish red, the third black, about one and one-half times length of second; arista brown, moderately flattened but slender-tipped; palpus red, stout; cheek barely one-third eye height; beard pale yellowish white.

Thorax black, thinly gray pollinose above, hind angles and scutellum dark brown with tawny pollen; five lateral scutellars on one side and four on the other, besides a short but stout preapical pair; sternopleurals four. Legs black; coxae and front femora in part pale-haired; pulvilli hardly as long as last tarsal segment. Wing dark brown, calypter opaque blackish; costal spine vestigial; subepaulet wholly orange red, epaulet darker red.

Abdomen as mentioned above; two to three pairs of median marginals on first segment and four on second; last two segments each with a marginal row; venter mostly subshining but with some pale pollen visible along median line of the three basal segments when viewed from behind.

Length, 14 mm.

Holotype female, Villarica, Paraguay, January, 1939 (F. Schade).

Gaediophana monnula n. sp.

A moderately large black species, with the thorax thinly gray pollinose above, the wings blackish near base and the ocellar bristles uniformly absent.

Male: Front at vertex 0.32 of head width, diverging from upper fourth into facial angle; head pollen gray, thinner on parafrontal which appears blackish, but in most views the pollen extends to the vertex; frontal vitta deep red, much narrower than one parafrontal; verticals two pairs; frontal row doubled, the inner or main row strongly divergent anteriorly in three or four bristles beneath antennal base; parafacial narrower than clypeal width, black-haired on about outer third from lowest frontals to cheek groove and with a more or less differentiated median row of stronger bristly hairs; epistoma as wide as clypeus and bowed forward from plane of latter; vibrissae nearly on oral margin; facial ridges strongly ciliate to upper third or more; antenna almost as long as face, basal segments usually with a slight reddish tinge, third wholly black, about three and one-half to four times length of second; arista black, thickened on proximal three-fourths, second segment elongate, the first short; cheek hardly one-third eye height, clothed with fine black hairs; palpus yellow but at times darker or brownish basally; haustellum

subequal length of palpi, stout, labella fleshy; eyes thickly pilose; back of head flat, cinereous, thickly clothed with pale hairs.

Thorax black, the hind angles and scutellum brownish, latter with thin tawny pollen, subshiny in most views; dorsal vittae narrow but distinct. Chaetotaxy: acrostichal 3,3; dorsocentral 3,4; intraalar 3; supraalar 3; presutural 2; notopleural 3; humeral 4; sternopleural 2,2; pteropleural 1-2 (smaller than sternopleural); intrapostalar differentiated; postalar 3; scutellum with 3 strong lateral, 1 decussate smaller apical and 1 discal pair, besides numerous erect coarse bristly hairs on disc; postnotal slope bare.

Legs black; mid tibia with a row of four or five bristles on basal half of outer front side; hind tibia irregularly ciliate on outer posterior side; claws and pulvilli longer than last tarsal segment.

Wing reaching well beyond apex of abdomen, subhyaline except near base; first vein bare, third with two or three hairs near base; apical cell open far before wing tip; hind cross vein in plane of apical cross vein and joining the fourth about one-third the distance from bend to small cross vein; costal spine vestigial; epaulet and calypter black.

Abdomen subshining black with a more or less distinct reddish tinge in the ground color on sides, viewed in a flat rear angle the surface above is covered with thin lusterless tawny pollen; last three segments with long erect hairs that become coarser or bristle-like on the median area of second and third, each of which bears a pair of differentiated discals; one pair of median marginals on first two segments, a marginal row on third and fourth besides a discal row on last; genital segments small; wholly black; forceps moderately elongate and slender, tips separated but not divergent, each bearing a minute basally directed spine on outer side shortly before apex, hind margin almost straight in profile; accessory process triangular, as broad as long, polished black, with anterior margin fringed with fine black hairs; fifth sternite black, deeply excised, the lobes sparsely clothed with rather short hairs along inner margin.

Female: Front at vertex 0.33 of head width; one reclinate and two proclinate orbitals; third antennal segment about two and one-half times length of second; abdomen short, more broadly ovate and flattened above than in male; claws and pulvilli shorter than last tarsal segment.

Length, 9.5-12 mm.

Holotype male and allotype female, Rio Frio, Mex., Mexico, September 3, 1947 (F. A. Cowan and M. R. Wheeler). Paratypes: 11 males and 5 females same data as type; 16 males and 11 females,

Nochixtlan, Oax, Mexico, September 6, 1947 (F. A. Cowan and M. R. Wheeler).

***Siphosturmia maltana* n. sp.**

Similar to the genotype (*rostrata* Coquillett) but the abdomen is almost wholly reddish in ground color; also the male front is distinctly wider and the last abdominal segment in the female is more elongated, slightly exceeding the combined length of the two preceding segments.

Male: Front at vertex 0.38 of head width, about equibroad on upper third thence widening gradually into facial angle; pollen on head wholly grayish white; frontal vitta deep red, narrower than one parafrontal; frontal rows doubled before mid front, main or inner row strongly divergent in three or four bristles beneath antennal base, uppermost two bristles stout and reclinate; ocellars and inner verticals strong; basal antennal segments red, third blackish, hardly one-third longer than second; arista black, shorter than antenna and thickened on basal two-thirds; clypeus hardly depressed, epistoma bowed forward from clypeal plane; facial ridges flattened, with a few bristles next to vibrissae, which are near oral margin; parafacial bare below frontals, one-half clypeal width on lower extremity; haustellum slender, tapering apically, slightly over one-half head height; labella slender slightly elongate; palpi yellow, bowed and but little thickened apically; eye bare; cheek barely one-fourth eye height.

Thorax black, with moderately dense gray pollen tinged with yellow on mesonotum, latter with four dark vitta before suture and five behind; acrostichal 3,3; dorsocentral 3,4; presutural 2; intraalar 3; supraalar 3; intrapostalar differentiated; sternopleural 4; pteropleural 1-2 (smaller than sternopleural); scutellum reddish, with 3 large lateral bristles besides 1 smaller decussate apical and 1 discal pair; calypters white. Legs black; hind tibia ciliate; claws and pulvilli moderately elongate. Wings hyaline; costal spine minute; first posterior cell open far before wing tip; cubitus obtuse angulate, without stump or fold; epaulet black.

Abdomen red with a dark median vitta, which widens gradually towards base and is more or less obscured by rather dense whitish pollen on last three segments above; one median marginal on first two segments, a row of about 10 stouter bristles on the narrow subshiny hind margin of third segment and several irregular rows on shining apical half of fourth above; genitalia small and retracted in repose; forceps shining brown, short, rather narrow from base to tip and straight in profile, divided apically but not divergent; acces-

sory process shorter, subtriangular; fifth sternite small, with a median V-shaped incision.

Female: Front at vertex 0.42 of head width, hardly any wider downward; two proclinate orbitals and outer verticals present; third antennal segment about one-fourth longer than second; arista thickened on proximal three-fourths; abdomen strongly arched in profile, last segment elongate, pointed, with numerous erect short bristles above except on basal margin; genitalia tubular, protrusile, terminating in a subchitinized blunt tip; claws nearly as long as last tarsal segment, pulvilli distinctly shorter; otherwise as in male.

Length, male, 10–11 mm.; female, 7.5–8 mm.

Holotype male and allotype female, Malta, Montana, July 26, 1947 (F. A. Cowan and M. R. Wheeler). Paratypes: 20 males and 6 females, same data as type.

Guerinia trudis n. sp.

Differs from the genotype (*simulans* Meigen) mainly in the peculiar structure of the male fifth abdominal sternite; the lobes of the latter are deeply excised near the middle of each inner margin and bear a dense vestiture of short coarse hairs at the base.

Male: Front at vertex 0.31 of head width; parafrontals and upper half of parafacials pale yellow to golden pollinose, face, including lower part of parafacials and cheeks grayish white to subsilvery; frontal vitta narrow, deep brown; frontals descending to middle of face; facial ridges weakly bristled on lower third or less; antenna wholly black, second segment about one-half length of third; arista black, thickened on basal half; palpus reddish; cheek nearly one-fifth eye height; eye bare. Thorax and scutellum black, with rather dense gray pollen which usually shows a slight brassy tinge on mesonotum; sternopleurals 3; acrostichals 3,3; dorsocentrals 3,3; scutellum with 3 lateral, 1 upturned strong apical and 1 smaller discal pair; calypter white. Legs black, moderately long; hind tibia not ciliate; front pulvillus subequal to combined length of two apical segments. Wings subhyaline; first posterior cell narrowly open far before wing tip; fourth vein with a wrinkle or fold at bend, latter subrectangular; last section of fifth vein a little less than one-half length of preceding; costal spine small. Abdomen long ovate, black with a distinct reddish tinge in ground color on sides and venter, segments two to four gray pollinose on basal half or more; intermediate segments usually without discs; first segment with one and second generally with two median marginals; third segment with a marginal row of about ten and fourth bristly on apical half above; genital segments rather small and retracted within tip of

abdomen; forceps united, broadly ovate at base tapering distally to a slender, acute beak; hind surface of base concave and thickly clothed with bright yellowish hairs; fifth sternite as mentioned above, the fourth thickly beset with bristly black hairs.

Female: Front at vertex 0.35 of head width; pollen on head at times wholly gray but parafrontals usually more or less golden; two proclinate orbitals and outer verticals well developed; second antennal segment fully two-thirds length of third, sometimes slightly reddish at apex; claws and pulvilli shorter than apical tarsal segment; otherwise, similar to male.

Length, 6–10 mm.

Holotype male and allotype female, Panguitch, Utah, June 15, 1948 (G. F. Knowlton and S. L. Wood). Paratypes: 10 males and 9 females, same data as type; 1 male, "Idaho, Aug. 10, '19"; and 1 male, Long Valley, Alpha, Ida., June 24, 1934 (Chas. H. Martin). In the California Academy of Sciences Collection, 5 males and 2 females, Yosemite, Cal., 3880–4000 ft., June 12–17, 1931, without collector's label, and 2 males, Hallelujah Jct., Lassen County, California, July 4, 1949 (J. W. MacSwain).

Unusual Cockroach: During 1942, the brown banded cockroach, *Supella supellectilium* (Serv.) was found to be infesting a home at Logan, Utah. The previous renter in this house had moved up from Texas, a year or so before, evidently bringing this pest along. Roaches which were sent in from a home at Payson, Utah, during August of 1943, were identified by Dr. H. K. Townes as belonging to this same species. Other specimens of this brown banded species also were called to my attention; these had been collected in Salt Lake City during 1945. Fortunately, this active species has not, as yet, become one of our "common" household pests.—G. F. KNOWLTON, Logan, Utah.